REMARKS

Now in the application are claims 1 – 45, of which claims 1, 7, 18, 22, 31, and 39 are independent. Applicants contend the pending claims are patentable for at least the reasons submitted below.

Related Applications:

Applicants to the attention of the Examiner, or other office official involved with the examination of the instant application, related pending application serial numbers 09/988,853 and 09/988,854.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102(e)

Claims 1 – 4, 6, 7, 9, 11 – 15, 17 – 20, 22, 24 – 28, 30 – 32, and, 38 – 40 stand rejected under 35 U.S.C. § 102(e) and as being anticipated by U.S. patent No. 6,629,264, Sicola *et al.* (hereinafter "Sicola"). Applicants respectfully traverse each of these rejections. For purposes of clarity in the discussion below, each of the respective related claim sets is discussed separately.

IA.   Rejection of Claims 1 – 4, 6 and 18 – 20 Under 35 U.S.C. § 102(e)

Claims 1 – 4 and 6 are directed to a method for replicating a first data volume from a first computer to a plurality of remote data volumes stored on one or more remote computers in a storage network. Performance of the method instructs a first data replication facility at the first computer to replicate the first data volume and to send the replica to multiple remote data volumes stored on one or more remote computers.

Claims 18 – 20 are computer-readable medium claims that parallel claims 1, 3 and 4.

Claims 1 – 4, 6 and 18 – 20 are not anticipated by Sicola. Sicola does not disclose instructing a first data replication facility at a first computer to replicate a first data volume and send the replica to multiple remote data volumes. The Examiner suggests that Sicola discloses this functionality at column 20, lines 38 – 59 of Sicola. The cited passage discusses the implementation of "association sets." Sicola defines an association set as a group of logical units (a set of one or more remote copy sets) on a local or remote pair of host controllers. *See,* column 19, lines 58 – 60 of Sicola. The phrase "remote copy set" is defined

and discussed in Figure 4 and the text related thereto. A "remote copy set" includes a pair of same-sized volumes, one on the local array and one on the remote array. *See,* column 8, lines 51 – 57 of Sicola. In other words, the information grouped in the association set requires the inclusion of information from the remote location. An example of this may be seen in the logical units 410 and 410 and Figure 4 of Sicola. More specifically, Sicola groups logical units (LUNs) between two remotely separated pairs of array controllers connected by redundant links. In this manner, if a primary controller serving associated LUNs fails, the set of LUNs in the association set fail over together to the secondary controller or vice versa. That is, if a primary controller fails, the association sets associated with the primary controller move to the secondary or redundant controller to maintain operation of the system. Therefore, an association set consists of pairs of volumes formed by a local volume and a remote volume located on a single remote target, whereas in the claimed invention, a first data volume is replicated and the replica is sent to multiple remote data volumes. Hence, Sicola fails to anticipate claims 1 – 4, 6 and 18-20.

Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 1 – 4, 6 and 18-20 under 35 U.S.C. § 102(e).

IB.   Rejection of Claims 7, 9, 11 – 15 and 17 Under 35 U.S.C. § 102(e)

Claims 7, 9, 11 – 15, and 17 are directed to a method performed in a computer network having computers. Each of the computers in the network host a data replication facility for remote mirroring of data between the computers. Performance of the method allows receipt of a data volume at the data replication facility of a first of the computers from the first computer for remote mirroring, and replicating the data volume from the first of the computers to multiple other ones of the computers.

Sicola does not anticipate claims 7, 9, 11 – 15 and 17. The Examiner suggests that Sicola discloses a step of replicating a data volume from a first of the computers to multiple other ones of the computers at column 6, lines 1 – 13 and at column 9, lines 1 – 5 of Sicola. A careful reading of the cited passages discloses that a host computer of Sicola writes data to a local storage array, replicates the locally stored data, and sends the replica to a remote target for storage on a remote array of storage devices. Nowhere does Sicola disclose replicating a data volume from a first computer to multiple other computers. Sicola is concerned with failover. That is, Sicola provides a primary and secondary local host along with a primary

and secondary remote host. As such, in the event of a failure at either the primary local host or the primary remote host, a transition occurs from the primary local or remote host to the secondary local and remote host to maintain operations. By contrast, the method performed in the computer network of claims 7, 9, 11 – 15 and 17 replicates a data volume from a first computer to multiple other computers. Sicola replicates a data volume from a first computer to one other computer, that is, the remote host, either the primary host or the secondary host, depending on which link is active. Hence, Sicola does not anticipate claims 7, 9, 11 – 15 and 17.

Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 7, 9, 11 – 15 and 17 under 35 U.S.C. § 102(e).

IC.   Rejection of Claims 22, 24 – 28 and 30 Under 35 U.S.C. § 102(e)

Claims 22, 24 – 28 and 30 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Sicola. Applicants respectfully traverse this rejection and contend that Sicola does not anticipate these claims as discussed below. Claims 22, 24 – 28 and 30 are dircted to a matter for performing remote mirroring in a computer network from a first network location to one or more remote network locations. The method includes a step of replicating data from a first network location to a first remote network location of one or more remote network locations. The method further includes a step of replicating at the first remote network location of the one or more network locations the replicated data from the first network location to a second remote network location of the one or more network locations to allow the first network location to perform remote data mirroring across multiple remote network locations. Nowhere does Sicola disclose such steps and, hence, fails to anticipate claims 22, 24 – 28 and 30.

Sicola replicates data from a local network location to a remote network location. Nowhere does Sicola disclose replicating at the remote network location the data from the local network location to another remote network location. By contrast, claims 22, 24 – 28 and 30 recite a step of replicating at the first remote network location of the one or more remote network locations the replicated data from the first network location to a second remote network location of the one or more network locations to allow the first network location to perform remote data mirroring across multiple remote network locations. Hence, Sicola fails to anticipate claims 22, 24 – 28 and 30.

Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 22, 24 – 28 and 30 under 35 U.S.C. § 102(e).

ID.   Rejection of Claims 31, 32 and 38 Under 35 U.S.C. § 102(e)

Claims 31, 32, and 38 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Sicola. Applicants respectfully traverse this rejection and contend that Sicola does not anticipate these claims as discussed below.

Claims 31, 32, and 38 are directed to a method for replicating data from a first location to a plurality of remote locations. The method includes a step of replicating a selected data structure at the first location and transmitting the replicated data structure to a first of the plurality of remote locations for replication of the replicated data structure to a second of the plurality of remote locations. Nowhere does Sicola disclose such steps.

Sicola discloses replication of data from a local host to a single remote host. Nowhere does Sicola disclose replication of data from a local host to a first remote host and replication at the first remote host to a second remote host. Sicola is concerned with maintaining data consistency in the event that a primary local/remote host pair fail by transitioning to a redundant or secondary local/remote host pair to maintain data integrity and data operations. Sicola does not disclose the steps recited in claims 31, 32, and 38. Hence, Sicola fails to anticipate claims 31, 32 and 38.

Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 31, 32 and 38 under 35 U.S.C. § 102(e).

IE.   Rejection of Claims 39 and 40 Under 35 U.S.C. § 102(e)

Claims 39 and 40 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Sicola. Applicants respectfully traverse this rejection and contend that Sicola does not anticipate these claims as discussed below.

Claims 39 and 40 are directed to a computer-readable medium holding computer executable instructions for replicating data from a first location to a number of remote locations. The executable instructions define a step of replicating a first data structure at a

first location, and a step of forwarding the replicated first data structure to a first of the multiple remote locations for replication of the replicated first data structure to a second of the multiple remote locations. Nowhere does Sicola disclose such steps. Hence, Sicola does not anticipate claims 39 and 40.

Sicola discloses a system having redundant local hosts and redundant remote hosts that communicate therebetween for storing data. The architecture, function and operation of the system disclosed by Sicola provides failover capability in the event that a primary local host or a primary remote host fail. In such a situation, data operations transition from the primary local and remote host pair to the redundant or secondary local and remote host pair to maintain data operations and preserve data consistency and integrity. As such, Sicola discloses replicating data at a local host and forwarding the replicated data to the remote host for storage. Nowhere does Sicola disclose that the remote host again replicates the data and forwards the second replication to another remote host. Accordingly, Sicola does not anticipate claims 39 and 40.

Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 39 and 40 under 35 U.S.C. § 102(e).

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

Claims 5, 10, 16, 21, 23, 29, 33 – 37 and 41 – 45 stand rejected under 35 U.S.C. § 103(a). Applicants respectfully traverse each of these rejections as discussed below. For purposes of clarity in the discussion below, each respective related claim set is discussed separately.

IIA.   Rejection of Claim 5 Under 35 U.S.C. § 103(a)

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicola in view of U.S. patent No. 6,718,347 of Wilson (hereinafter "Wilson"). Applicants respectfully traverse this rejection and further contend that claim 5 is patentable over the Sicola patent or the Wilson patent, alone or in combination.

The Wilson patent is cited for teaching or suggesting the claimed communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

Claim 5 depends on claim 1 and, therefore, incorporates the patentable features of claim 1. Claim 21 is a readable medium that parallels claim 5.

The citation of the Wilson patent fails to cure the factual deficiencies of the Sicola patent. Wilson is cited for teaching or suggesting the communication protocol used to communicate between a first computer and the one or more remote computers comprises the TCP/IP suite of protocols. The Wilson patent is not cited for forwarding a replica from a first data application facility at a first computer to multiple remote data volumes stored on one or more remote computers. The Sicola patent, in view of the Wilson patent fails to detract from the patentability of claims 5 and 21. Accordingly, the allowance of claims 5 and 21 are in order.

IIB.   Rejection of Claims 10 and 16 Under 35 U.S.C. § 103(a)

Claims 10 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicola in view of Wilson. Applicants respectfully traverse this rejection and further contend that claims 10 and 16 are patentable over the Sicola patent or the Wilson patent, alone or in combination. The Wilson patent is cited for teaching or suggesting the network transfer protocol between the computers in the network comprises the TCP/IP protocol and Wilson is further cited for teaching or suggesting that the computers of the network comprise one of a server, a workstation, a mainframe and a personal computer.

Claims 10 and 16 depend on claim 7 and, therefore, incorporate the patentable features of claim 7.

The citation of the Wilson patent fails to cure the factual deficiencies of the Sicola patent. Wilson is cited for teaching or suggesting the network protocol for communication between the computers in the computer network comprises the TCP/IP protocol. Wilson is further cited for teaching or suggesting that the computers forming the computer network comprise one of a server, a workstation, a mainframe and a personal computer. Nevertheless, the Wilson patent is not cited for teaching or suggesting the replication of a data volume from a first of the computers in the computer network to multiple other computers in the computer network. Thus, the Sicola patent, in view of the Wilson patent, fails to detract from the patentability of claims 10 and 16. Accordingly, the allowance of claims 10 and 16 is in order.

IIC.   Rejection of Claims 23 and 29 Under 35 U.S.C. § 103(a)

Claims 23 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicola in view of Wilson. Applicants respectfully traverse this rejection and further contend that claims 23 and 29 are patentable over the Sicola patent or the Wilson patent, alone or in combination. Claims 23 and 29 depend on claim 22 and, therefore, incorporate the patentable features of claim 22.

The citation of the Wilson patent fails to cure the factual deficiencies of the Sicola patent. Wilson is cited for teaching the transmission capacity bandwidth between a first network location and a first remote network location differs from the computer network transmission bandwidth capacity between the first remote network location and the second remote network location. Wilson is further cited for teaching or suggesting that the communication between the first network location and the one or more remote network locations occurs in the TCP/IP protocol suite. The Wilson patent is not cited for teaching or suggesting the replication of data at a first remote network location of multiple remote network locations and replicating data from a first network location to a second remote network location to allow the first remote network location to perform remote data mirroring across multiple remote network locations. Hence, the Sicola patent, in view of the Wilson patent, fails to establish a *prima facie* case of obviousness and, therefore, fails to detract from the patentability of claims 23 and 29. Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 23 and 29 under 35 U.S.C. § 103(a).

IID.   Rejection of Claims 33 – 37 Under 35 U.S.C. § 103(a)

Claims 33 – 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicola in view of Wilson. Applicants respectfully traverse this rejection and further contend that claims 33 – 37 are patentable over the Sicola patent or the Wilson patent, alone or in combination.

Claims 33 – 37 depend, directly or indirectly, upon independent claim 31, and therefore, incorporate the patentable features of claim 31. Claims 33 – 37 are patentable for at least this reason.

The Wilson patent is cited for teaching or suggesting that the first location communicates with multiple remote locations in the TCP/IP protocol suite. The Wilson

patent is further cited for teaching or suggesting that the transmission of the replicated data to one a first of the remote location occurs at a first transmission rate and is further cited for teaching or suggesting that the transmission of the replication of the replicated data structure from the first remote location to a second of the multiple remote locations occurs at a second transmission rate. The Wilson patent is further cited for teaching or suggesting that the first location comprises a workstation executing a first operating system and one of the multiple remote locations comprises a server executing a second operating system.

The citation of the Wilson patent fails to cure the factual deficiencies of the Sicola patent. The Wilson patent is cited for disclosing a communication protocol or multiple transmission rates, or for different operating systems and platforms. The Wilson patent is not cited for transmitting a replicated data structure to a first of multiple remote locations for replication of the replicated data structure to a second of multiple remote locations. Thus, the Sicola patent, in view of the Wilson patent, fails to establish a *prima facie* case of obviousness and, thus, fails to detract from the patentability of claims 33 – 37. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 33 – 37 under 35 U.S.C. § 103(a).

IIE.   Rejection of Claims 41 – 45 Under 35 U.S.C. § 103(a)

Claims 41 – 45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicola in view of Wilson. Applicants respectfully traverse this rejection and further contend that claims 41 – 45 are patentable over the Sicola patent or the Wilson patent, alone or in combination.

Claims 41 – 45 depend, directly or indirectly, on claim 39 and, therefore, incorporate the patentable features in dependent claim 39.

The Wilson patent is cited for teaching or suggesting that the first location communicates with the multiple remote locations using the TCP/IP protocol suite. The Wilson patent is further cited for teaching or suggesting that the forwarding of the replicated first data structure to a first of the multiple remote locations occurs at a first transmission rate and is cited for teaching or suggesting that the forwarding of the replication of the replicated first data structure from the first of the multiple remote locations to a second of the multiple remote locations occurs at a second transmission rate. The Wilson patent is further cited for

teaching or suggesting that the first location comprises a workstation executing a first operating system and is cited for teaching or suggesting that a first of the multiple remote locations comprises a server executing a second operating system.

The citation of the Wilson patent fails to cure the factual deficiencies of the Sicola patent. The Wilson patent is cited for teaching or suggesting a communication protocol, for teaching or suggesting different transmission rates for transmitting replicated data between locations and is further cited for teaching or suggesting that the multiple locations have multiple configurations and multiple operating platforms. Nevertheless, the Wilson patent is not cited for teaching or suggesting the forwarding of a replicated first data structure to a first of multiple remote locations for replication of the replicated first data structure to a second of the multiple remote locations. That is, the Sicola patent, in view of the Wilson patent, fails to establish a *prima facie* case of obviousness with which to use in rejecting claims 41 – 45. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 41 – 45 under 35 U.S.C. § 103(a).

IIIA.   Rejection of Claim 8 Under 35 U.S.C. § 103(a)

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicola in view of U.S. patent No. 6,209,002 of Gagne *et al.* (hereinafter "Gagne"). Applicants traverse this rejection and further contend that neither Sicola nor Gagne, alone or in combination, detract from the patentability of this claim.

Claim 8 is patentable for at least the same reasons set forth above regarding claim 7, from which it depends.

The Gagne patent is cited for teaching or suggesting the packaging with the replica selected data information that identifies a storage location for the replica at each of the multiple other computers. Nonetheless, as discussed above in connection with the rejection of claim 7, the Sicola patent does not disclose each and every feature of claim 7. The Gagne patent does not bridge the factual deficiencies of the Sicola patent and, therefore, the Sicola patent, in view of the Gagne patent, fails to establish a *prima facie* case of obviousness for use in detracting from the patentability of claim 8. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claim 8 under 35 U.S.C. § 103(a).

CONCLUSION

Applicant believes no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. SMQ-082 from which the undersigned is authorized to draw.

Dated: February 14, 2005   Respectfully submitted,

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